

Daily Temperature Measuring Device Accuracy Testing Record

Date M/D/YY	TEMPERATURE MEASURING DEVICE (e.g., Thermometer and Thermocouple) BEING TESTED FOR ACCURACY (list)		ACCURACY TEST METHOD	ACCURACY LIMIT MET? Reading between 31.1 °F and 32.9 °F OR -0.5 °C and 0.5 °C? YES or NO	CORRECTIVE ACTION If accuracy limit is not met, describe corrective action taken. Attach additional sheets as necessary.	INITIALS: PERSON DOING TEST
	DESCRIPTION Type, model, serial number and any other identifying mark if available	READING °F OR °C				
			<i>Ice Water Slurry Solution</i>			
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Comments: _____

The supervisor/lead will review this form at least on a weekly basis, and will sign and date the record upon review.

Supervisor/Lead: Signature _____, Date of Record Review: _____

Temperature Measuring Device Accuracy Testing Standard Operating Procedure:

Accuracy testing of the temperature measuring devices must be completed to verify that all stem and probe type temperature measuring devices used are accurately measuring temperatures. Testing must be conducted at least daily, with length of time not exceeding one day from the previous accuracy test. Additional accuracy verifications are required as needed (e.g., prior to initial use, after being dropped, following an invalid reading, or service required). Complete the "Daily Temperature Measuring Device Accuracy Testing Record" to record all test results. The supervisor/lead will review this form on a weekly basis, and will sign and date the record upon review.

Definitions:

- A. **Accuracy:** the degree of agreement between a measured temperature quantity and the standard accepted value (ice water temperature) for that quantity. If the digital thermometer is used over a narrow temperature range [e.g., -58°F (-50°C) to 212°F (100°C)], a single point check at the ice melting point of 32°F (0°C) is a sufficient method of performance verification. Testing using boiling water is not necessary. (Source: http://www.nist.gov/pml/mercury_validation.cfm).
- B. **Calibration:** testing to determine the accuracy of a measuring instrument against a known traceable National Institute of Standards and Technology (NIST) standard located at MDH laboratory or other laboratory testing firm designated by MDH.
- C. **Temperature measuring device:** (As defined in Minnesota Food Code 4626.00201-201.10 Subp. 89) "Temperature measuring device" means a thermometer, thermocouple, thermistor, or other device that indicates the temperature of food, air, or water."

Date:

Enter Month/Day/Year when testing is done.

Temperature Measuring Device Being Tested for Accuracy:

Description: Provide a written description of temperature measuring device being checked for accuracy. State the type, model and serial number if available. If the temperature measuring device is labeled or identified by firm in a certain manner (e.g., using the letters 1, 2, 3, 4, etc.), indicate these as well.

Reading °F: Write down the temperature reading of each temperature measuring device. Always follow manufacturer's directions.

Accuracy Test Method:

List method used. At this time, all accuracy testing will be done using the Ice Water Slurry Solution Accuracy Test. Always follow manufacturer's directions.

Accuracy Limits Met: Yes or No

1. Compare the actual temperature measuring device reading with the standard accepted value for the method used (see Ice Water Slurry Solution Accuracy Test Procedures below).
2. If temperature measuring device is not verified accurate, that temperature measuring device cannot be used to measure temperatures unless proper corrective action is taken prior to use.

Corrective Action:

As needed, provide a written description of corrective action taken. Examples: A) Confirmed testing procedure was correctly followed. B) Replaced battery. C) New test completed to verify accuracy after replacing battery. D) Thermocouple reading was not accurate after replacing battery. E) Discontinued use of thermocouple. F) Replaced thermocouple. G) Tested replacement thermocouple prior to usage. H) Replacement thermocouple was accurate and results were recorded on "Weekly Temperature Measuring Device Accuracy Testing Record."

Initials:

The person conducting the accuracy test will initial the record at the time the test is completed.

Comments:

Record additional comments and documentation as needed.

Ice Water Slurry Solution Accuracy Test Procedures:

- 1) Allow all temperature measuring devices to acclimate to normal room temperature for at least 30 minutes prior to testing.
- 2) Fill a beaker, cup or container to the top with cubed or crushed ice so it is at least 8.5 inches (approximately 21.5 cm) deep.
- 3) Add 8 inches (approximately 20 cm) cold water to the ice to make an ice water slurry solution.
- 4) Let the ice water solution sit for at least 5 minutes, so that the ice water temperature equilibrates.
- 5) Insert the temperature measuring device to be tested so that the tip of the probe is four to six inches (approximately 10 cm to 15 cm) below the surface of the water. (If a temperature measuring device probe is very short, immerse the probe as deeply as you can without getting water in the wiring.)
- 6) Constantly stir the ice water solution with the probe of the temperature measuring device to ensure a uniform temperature throughout the mixture.
- 7) Allow the temperature of the temperature measuring device being tested to stabilize and record the stabilized reading.
- 8) Subtract the reading of the temperature measuring device being tested from the standard of 32.0 °F (0°C). The result gives the error of the temperature measuring device you are testing.
- 9) If reading is within + or - 0.9° F OR + or - 0.5° C, then the temperature measuring device being tested is accurate.
- 10) The reading from Step 8 must be between 31.1 °F and 32.9 °F OR between - 0.5° C and 0.5° C. If not, take appropriate corrective action.
- 11) Repeat Steps 5 - 10 as needed per the number of temperature measuring devices being tested.